

The Wireless LAN and HP iPAQ Pocket PCs



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Overview

This document is designed to assist users in understanding wireless communication, how it works, and how to create and configure wireless Local Area Network (WLAN) connections on HP iPAQ Pocket PC h4100/4300 series and h5400/h5500 series handheld devices.

HP iPAQ Pocket PC wireless products

HP currently offers the HP iPAQ Pocket PC h4100 series, h4300 series, h5400 series, and the h5500 series. These Pocket PCs have integrated WLAN capability.

What is a WLAN?

A wireless network is a group of computers and associated devices that share a common wireless communication link over radio waves. A wireless network is enabled by a collection of wireless access points residing within a small geographic area, such as in an office building or wide fidelity (Wi-Fi) public hotspot.

WLANs enable a variety of mobile transactions such as Internet and e-mail access, and sophisticated tasks such as allowing sales people to access customer records from customer locations. The signal strength of a WLAN can normally reach a maximum radius of 500 feet indoors and 1,000 feet outdoors, however the area can be extended with antennas, transmitters and other access devices. Figure 1.0 below illustrates a WLAN setup with an access point.

NOTE: Signal strength may be reduced by conditions such as wireless interference, obstructions (walls, for instance), and signal reflection. The radius listed above represents the maximum distance an un-enhanced WLAN signal can travel under prime operating conditions.



Figure 1.0 WLAN with access point

Wireless fidelity

Wi-Fi, also known as 802.11 is a communication standard created by the Institute of Electrical and Electronic Engineers (IEEE). 802.11 defines the electrical and radio frequency components of a

wireless Ethernet. The standard also defines an encryption algorithm (Wired Equivalent Privacy – WEP) to secure the network. The Wi-Fi Alliance is the body that ensures compatibility and is responsible for issuing standard compliance tests and logos.

Wi-Fi hotspots

Wi-Fi hotspots are WLANs that use the IEEE 802.11 protocol to establish wireless connections for general public use. Offered to customers by a growing number of hotels, restaurants, airport lounges, coffee shops and other businesses, Wi-Fi hotspots enable users to access Internet resources, send and receive e-mail, use instant messaging, and perform similar tasks they would otherwise perform on their business or home PCs. Many Wi-Fi hotspots charge their customers a fee for this service.

Convenience and increased productivity make Wi-Fi hotspots attractive to users on the go, but hotspots may also increase the possibility of security risks. The security risks are manageable, however, if safety precautions are taken. For information about measures users can take to minimize security risks in WLAN connections, refer to the HP white paper entitled *secure wireless local area networks with hp mobile devices* located at the following website:

http://www.hp.com/sbso/wireless/secure_wlan_mobile.pdf

What's the difference between wireless and mobile?

A *mobile* device is a *portable* device. A desktop could be a mobile device if it could be easily carried around. A *wireless* device, such as the HP iPAQ Pocket PC h4100, h4300, h5400, or h5500 series handheld device, provides some type of network connectivity. A cell phone is wireless; a laptop or PDA can be wireless when using a wireless modem. Similarly, applications are wireless when they connect and exchange data with a network.

Common WLAN terms

Access Points

Access Points connect wireless networks and enable the sending and receiving of data between wireless clients. It is the connection point for a network, most often a component that is hard-wired into the main network. Access points are responsible for converting the wired network into a wireless one. An access point serves as a communication hub, a traffic controller, directing all the data on the network and allowing a user to communicate at maximum speed.

Wireless networks allow users to "roam" between access points, working in much the same way as cellular phones. More detailed information about roaming appears later in this document.

Virtual Private Network

A virtual private network (VPN) allows two or more private networks to be connected over a publicly-accessed network. In a sense, VPNs are similar to WANs or a securely encrypted tunnel, but the key feature of VPNs is that they can use public networks like the Internet, rather than rely on expensive, privately leased lines. Additionally, VPNs have the same security and encryption features as private networks.

Voice over IP

Voice over Internet Protocol (VoIP) is the ability to make telephone calls and send faxes over IP-based data networks with a suitable quality of service and superior cost/benefit ratio.

Terminal services client

The Terminal Services Client establishes a session with the server. User keyboard and mouse activity is sent via the network to control the server session. Applications launched in the session use the resources (processor and memory, for example) on the server and displayed output is resent to the user display screen. Multiple clients can connect to the server simultaneously.

Subnet

By definition, a subnet (short for sub-network) is an identifiably separate part of an organization's network. Typically, a subnet can represent all the machines (computers, laptops, handheld devices, printers, etc.) at one geographic location, in one building, or on the same LAN. Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address.

WLAN standards

IEEE wireless standards such as 802.11 have undergone many improvements and addendums since they were first defined. The following list offers a high-level description of each of the better known standards:

- 802.11, which operates in the 2.4-GHz frequency band and offers only 2 megabits-per-second (Mbit/s) of overall throughput, was the original implemented standard.
- 802.11b is the most widely used form of wireless fidelity (Wi-Fi) today. The radio operates within the 2.4-GHz frequency band but allows a maximum data throughput of 11-Mbit/s.
- 802.11a is a short range, but extremely high-speed Wi-Fi network. This standard is not compatible with existing 802.11b networks. 802.11a operates in the 5-GHz frequency band and can transfer data at a maximum speed of 54-Mbit/s.
- 802.11g is compatible with existing 802.11b networks, but also enables higher speeds. Its maximum speed is 54-Mbit/s, but 802.11g operates in the 2.4-GHz frequency band.

NOTE: The 54-Mbit/s maximum speed of 802.11g is reached only when the network contains other 802.11g-based devices. Users who mix 802.11b devices in that network will see only a maximum throughput value of 22 Mbit/s.

- The 802.1X standard defines the method of encapsulating Extensible Authentication Protocols (EAPs) over wired or wireless Ethernet networks. This standard does not define any specific security protocol, but is based on EAP types documented and ratified by the Internet Engineering Task Force (IETF).

What is Roaming?

Roaming refers to the ability of a WLAN to switch between wireless access points to maintain a WLAN connection as a user travels from one location to another. This access point switching, referred to as roaming, occurs automatically and is normally transparent to the user.

Wireless connections roam from one access point to another when the detected signal strength weakens. A weak signal in a Pocket PC triggers the handheld device to search for another signal to "jump" to. The new signal is chosen from a list of preferred networks configured by the Wi-Fi user interface in the device operating system.

Two basic roaming techniques are currently available: Address transition roaming and Location transition roaming.

Devices using the address transition roaming technique briefly break their network connection when roaming between (changing) access points. The Pocket PC immediately re-negotiates for a valid address. The user's ability to communicate is virtually guaranteed, but sessions open at the time the network breaks will also disconnect. The address transition roaming technique is best suited to networks that have access points on different sub-networks with different address ranges. The HP iPAQ Pocket PC h5500 series supports this type of roaming.

The location transition roaming algorithm enables a handheld device to move seamlessly between access points without disconnecting from the network. Using this roaming algorithm, a given device will not change its address and devices will maintain sessions when roaming across access points on the same subnet. Most shipping Wi-Fi devices support this roaming technique.

However, HP iPAQ Pocket PCs with zero-configuration-based Microsoft Windows Pocket PC Operating Systems, allow WLAN connections to disconnect and reconnect when a new access point is found. HP iPAQ Pocket PCs h4100, h4300, and h5400 series are affected by this anomaly.

HP-supported authentication wireless protocols

HP iPAQ Pocket PC h4100, h4300, h5400, and 5500 series handheld devices currently support the following wireless authentication protocols:

- Lightweight Extensible Authentication Protocol (LEAP)
- Protected Extensible Authentication Protocol (PEAP)
- Transport Layer Security (TLS)
- Wired Equivalent Privacy (WEP)

HP iPAQ Pocket PC-Supported Wireless Extensible Authentication Protocols					
Protocol Model	HP iPAQ Pocket PC Series with either Microsoft Pocket PC 2003 ROM Upgrade or Microsoft Pocket PC 2002 Operating System				
	h5400 (PPC 2002)	h5400 (PPC 2003)	h5500	h4100	h4300
WEP 64*	✓	✓	✓	✓	✓
WEP 128*	✓	✓	✓	✓	✓
LEAP*	✓	✓	✓	✓	✓
EAP-TLS*	X	✓	✓	✓	✓
PEAP*	X	✓	✓	✓	✓
WPA* **	X	X	✓	X	X
EAP-TTLS*	X	X	X	X	X
* h5400 with Microsoft Windows Pocket PC 2003 ROM upgrade					
**h5500 component of WPA supported with ROM, WLAN firmware, and driver updates					

LEAP

Cisco Compatible Extensions (CCXs) are a collection of authentication protocol features that include some security enhancements. One part of this Cisco collection is LEAP. LEAP is not a true Extensible Authentication Protocol (EAP)-type protocol; support for LEAP is found only in Cisco access points and infrastructure. All HP iPAQ Pocket PCs that ship with Wi-Fi radios support LEAP. Another aspect of CCX is Cisco Key Integrity Protocol (CKIP), which is a Cisco proprietary implementation of temporal key support.

A LEAP-based network authenticates user credentials before allowing access to the network; inner and outer authentications are not required. While this does reduce the overall infrastructure load, there are some security concerns surrounding this implementation.

PEAP

PEAP uses digital certificates for network server authentication and passwords for client authentication. PEAP requires an EAP user name, EAP password, and a Certificate of Authority (CA). Dynamic encryption keys are also used in this authentication type.

802.1X EAP types: Protected EAP (PEAP)

Microsoft, Cisco, and RSA Security created this EAP type to reduce the certificate requirements found in EAP-TLS. This EAP type uses a root server certificate in setting up the secure tunnel to the authentication server. This allows user credentials to then be obtained and transmitted to the authentication server. Unlike EAP-TLS, this protocol will authenticate the user, but not necessarily the device.

TLS

TLS ensures Internet privacy between communicating applications and their users. When a server and user communicate, TLS prevents a third party from eavesdropping or tampering with the transmissions. TLS connection security uses an encryption method. TLS allows the server and user to authenticate each other and to negotiate for an encryption algorithm and cryptographic keys before data is exchanged.

802.1X EAP type: Transport Layer Security (EAP-TLS)

EAP-TLS utilizes a certificate pair for authentication. This EAP type was originally developed by Microsoft and is used as a core component for the other EAP types listed below as a first line authentication. This system uses a public/private key infrastructure to setup a secure conduit to exchange the encryption keys. The exchange is very similar to the exchange used in a secure web site (HTTPS.) The disadvantage to this protocol is the requirement for extensive certificate management; this EAP type does not authenticate the user as much as it authenticates the device.

WEP

WEP encrypts data immediately before wireless transmissions are sent, and decrypts data it receives. WEP security is considered the first significant line of defense against casual eavesdroppers. If WEP uses a secret key, which is considered similar to a password, then the key must be available on all of the network's wireless devices.

Temporal Key Integrity Protocol (TKIP) technology improves WEP by using a per-packet key mechanism, in which the base key is modified for each packet sent over the network. The overall key length is extended to 256-bits for encryption.

NOTE: For additional information about the LEAP authentication protocol, refer to the Cisco website: www.cisco.com

The following table lists HP iPAQ Pocket PC-supported wireless authentication protocols.

Then and now—HP iPAQ Pocket PC wireless implementation

HP iPAQ Pocket PCs are designed to increase productivity by giving customers the ability to continue working, even when their work takes them away from the office. Whether meeting in an office on the

other side of the company, across town at a customer site, at home working late, whatever the reason, HP produces wireless and mobile devices to help customers expand their working world.

Today, HP engineering works continuously to provide enhancements, new functionality, and evolving products that will keep customers on the cutting edge of the still emerging wireless technology.

A key component in enabling the HP wireless vision involves the process of roaming. Roaming is discussed in more detail in the next section, but it is important to mention here.

HP iPAQ Pocket PC 4000 and 5000 series handheld devices were originally designed to disconnect and reconnect during roaming between access points. While the design works flawlessly under Address Transition roaming, it causes interruption to applications under Location Transition roaming.

HP engineering is approaching release of a solution to the roaming issue, which will soon be available for download on the HP website at www.hp.com. (On the HP homepage, click Support & Drivers, Handheld Devices then iPAQ Pocket PCs; select the series, and then download the drivers and software).

NOTE: It is a good idea to periodically check the HP website for ROM update and SoftPak releases. HP engineering is working on a number of enhancements, updates, and fixes in addition to the roaming issue.

ROM and driver updates

ROM updates often contain information that is more recent than that contained in the original ROM release, or in the most recently updated version of the ROM (e.g., one or more ROM updates may have already been released since the original ROM version). A ROM update can include driver updates to either enhance or correct driver performance, software updates, and more.

Updates are released in one of two download types: RAM or Execute in Place (XIP). XIP updates are permanent updates in the ROM.

ROM updates are language-specific, but may not be intended for all customers. If a ROM update contains information that is not critical to the user, then the user may download it at a later date, or not at all.

Determining the ROM release

To determine the most recent ROM release on an HP iPAQ Pocket PC, perform one of the following:

1. Soft-reset the device. The ROM version appears on the bottom right-hand corner of the screen.
2. On the Start screen, tap Start, Settings, tap the System tab, tap the Asset Viewer icon, tap the "+" sign next to Version. The ROM Revision and revision date appear, along with operating system information.

The WLAN and HP iPAQ Pocket PCs

Turning on and off the WLAN

NOTE: Minor differences exist in the basic operation of the HP iPAQ Pocket PC h5400 series; some have the Microsoft Windows Pocket PC 2003 Operating System via an update, and some with the Microsoft Windows Pocket PC 2002 Operating System, with which they were originally shipped. For this reason, the h5400 series instructions are separated as such.

h4100 and h4300 series

Perform the following steps to set up a WLAN connection on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. On the Start screen, tap the Connectivity icon (✱ or ✱✱) in the Start bar at the top of the device **or** on the Start screen, tap Start and then tap "iPAQ Wireless."
2. If the Connectivity icon (✱) in the Start bar was tapped, then tap "Turn Wireless On" or "Turn off flight mode" when the Connectivity box appears. Or, tap Start, iPAQ Wireless, and then tap the WLAN icon; the iPAQ Wireless screen appears with the message, "Tap a button to turn an individual wireless feature ON/OFF." The WLAN icon displays in orange (the "off" color); tap the WLAN icon to turn on the WLAN. The icon changes to green (the "on" color) and the WLAN indicator light flashes green.

Even though the WLAN indicator flashes green (on), it does not necessarily mean a connection has been established.

Battery Saving Tip: Turn the WLAN off when it is not being used. When the WLAN is on, make sure one of the WLAN power saving modes is enabled. (Tap Start, Settings, and then tap the System tab. On the Settings screen, tap the power icon, the control tab, and then tap Auto in the WLAN Power save mode).

NOTE: The Power save modes are not always supported by all access points and networks. If a connection cannot be made to a particular wireless network, then try turning off the WLAN Power save mode.

h5400 series with Microsoft Pocket PC 2002

Perform the following steps to turn on or off the WLAN:

1. On the Start screen, tap Start and then tap "iPAQ Wireless."
2. On the iPAQ Wireless screen, tap the "Wireless Control" icon.
3. When the Wireless Control screen appears, tap the WLAN icon. The WLAN icon displays in orange (off); tap the WLAN icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes green.

NOTE: Even though the WLAN indicator flashes green (on), it does not necessarily mean a connection has been established.

Battery saving tips:

- A. Turn off the WLAN when it is not in use.
- B. Perform one or more of the following battery-saving tasks:
 - I. Tap Start, Settings, tap the "System" tab, and then tap the power icon.
 - II. On the Power screen, tap the "Main" tab and change the power settings as desired. Tap OK twice to return to the Start screen, **or** tap the Standby tab at the bottom of the display to continue adjusting power settings.
 - III. On the Power screen, under the "Standby" tab, adjust the standby period as desired. Tap OK until the Start screen reappears, **or** tap the "USB Changing" tab at the bottom of the display.
 - IV. Still on the Power screen under the "USB Charging" tab, adjust the settings as desired. Tap OK until the Start screen reappears, **or** tap [backlight](#) in the "Adjust backlight settings to conserve power" bar at the bottom of the device.
 - V. On the Backlight screen, tap the "Battery Power" tab. Adjust the "On Battery Power" settings as desired. Tap OK until the Start screen reappears, **or** tap the "External Power" tab at the bottom of the Backlight screen.

- VI. On the Backlight screen, adjust the external power settings as desired. Tap OK until the Start screen reappears or tap the "Brightness" tab at the bottom of the Backlight screen.
- VII. On the "Brightness" screen, adjust the brightness levels as desired. Tap OK until the Start screen reappears.

NOTE: The main battery saving tasks may be performed in any order.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to turn on or off the WLAN:

1. On the Start screen, tap Start and then tap "iPAQ Wireless."
2. On the iPAQ Wireless screen, tap the "Wireless Control" icon.
3. When the Wireless Control screen appears, tap the "WLAN" icon. The WLAN icon displays in orange (off); tap the WLAN icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes orange.

NOTE: Even though the WLAN indicator flashes green (on) it does not necessarily mean a connection has been established.

Battery saving tips:

- A. Turn off the WLAN when it is not in use.
- B. Perform one or more of the following battery-saving tasks:
 - I. Tap Start, Settings, tap the "System" tab, and then tap the Power icon.
 - II. On the Power screen, tap the "Main" tab and change the power settings as desired. Tap OK twice to return to the Start screen, **or** tap the Standby tab at the bottom of the display to continue adjusting power settings.
 - III. On the Power screen, under the "Standby" tab, adjust the standby period as desired. Tap OK until the Start screen reappears, **or** tap the "USB Changing" tab at the bottom of the display.
 - IV. Still on the Power screen under the "USB Charging" tab, adjust the settings as desired. Tap OK until the Start screen reappears, **or** tap [backlight](#) in the "Adjust backlight settings to conserve power" bar at the bottom of the device.
 - V. On the Backlight screen, tap the "Battery Power" tab. Adjust the "On Battery Power" settings as desired. Tap OK until the Start screen reappears, **or** tap the "External Power" tab at the bottom of the Backlight screen.
 - VI. On the Backlight screen, adjust the external power settings as desired. Tap OK until the Start screen reappears or tap the "Brightness" tab at the bottom of the Backlight screen.
 - VII. On the "Brightness" screen, adjust the brightness levels as desired. Tap OK until the Start screen reappears.

NOTE: The main battery saving tasks may be performed in any order.

h5500 series

Perform the following steps to turn on or off the WLAN:

1. On the Start screen, tap Start and then tap "iPAQ Wireless."
2. On the Wireless screen, tap the "iPAQ Wireless" icon.
3. When the Wireless Control screen appears, tap the WLAN icon. The WLAN icon displays in orange (off); tap the WLAN icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes orange.

NOTE: Even though the WLAN indicator flashes orange (on), it does not necessarily mean a connection has been established.

Battery saving tips:

- A. Turn off the WLAN when it is not in use.
- B. Perform one or more of the following battery-saving tasks:
 - I. Tap Start, Settings, the “System” tab, and then tap the power icon **or** on the Power screen, tap the “Main” tab and change the power settings as desired. Tap OK twice to return to the Start screen, **or** tap the Standby tab at the bottom of the display to continue adjusting power settings.
 - II. On the Power screen, under the “Standby” tab, adjust the standby period as desired. Tap OK until the Start screen reappears, **or** tap the “USB Changing” tab at the bottom of the display.
 - III. Still on the Power screen under the “USB Charging” tab, adjust the settings as desired. Tap OK until the Start screen reappears, **or** tap [backlight](#) in the “Adjust backlight settings to conserve power” bar at the bottom of the device.
 - IV. On the Backlight screen, tap the “Battery Power” tab. Adjust the On Battery Power settings as desired. Tap OK until the Start screen reappears.
 - V. Tap the “External Power” tab at the bottom of the Backlight screen.
 - On the Backlight screen, adjust the external power settings as desired. Tap OK until the Start screen reappears **or** tap the “Brightness” tab at the bottom of the Backlight screen.
 - On the “Brightness” screen, adjust the brightness levels as desired. Tap OK until the Start screen reappears.

Connecting to a network

h4100 and h4300 series

Perform the following steps to connect to a WLAN network:

1. If at least one network is present on the Pocket PC, then the Network indicator icon (📶) will appear in the Start bar. Tap the icon; when the “Multiple Networks Indicated” pop-up box appears, tap the desired network.

NOTE: A network can be set up manually, if desired. See “Manually entering new network settings” in the next section.

Figure 1.1 shows the Network indicator pop-up box.

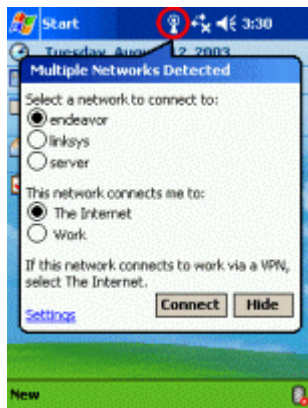


Figure 1.1: Network indicator

2. In the same pop-up box under “This network connects me to:” tap the Internet button (if the network connects to the Internet **without using** proxy settings) or the Work button (if the network **uses** proxy settings to connect). If doubt exists about whether the network uses proxy settings, then contact the system administrator. For additional information, see the section in this document entitled “Setting up the proxy server.”
3. If the display prompts for a Network key (WEP), then enter the key and tap Connect. (If unsure about the Network key, then contact the network administrator.)

h5400 series with Microsoft Pocket PC 2002

Perform the following steps to connect to a WLAN network:

1. On the Start screen, tap Start, Settings, tap the Connections tab, and then tap the Connections icon.
 - A. If the network connects to the Internet **without using** proxy settings—on the Connections screen, tap the “Internet Settings” box next to the globe/handheld device icon, and beneath the text, “When needed, automatically connect to The Internet using these settings:”
 - B. Tap the “Connect...” box beneath the connection.
2. On the Start screen, tap Start, Settings, Tap the Connections tab, and then tap the Connections icon.
 - A. If the network connects **using** proxy settings—on the Connections screen, tap the “Work Settings” box next to the network/handheld device icon and beneath the text, “When needed, automatically connect to Work using these settings:”
 - B. Tap the “Connect...” box beneath the connection.

NOTE: If in doubt about whether the network uses proxy settings, or if the display prompts for a WEP, then contact the system administrator. For additional information, see the section in this document entitled “Setting up the proxy server.”

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to connect to a WLAN network:

1. If at least one network is present on the Pocket PC, then the Network indicator icon (📶) will appear in the Start bar. Tap the icon; when the “Multiple Networks Indicated” pop-up box appears, tap the desired network.

NOTE: A network can be set up manually, if desired. See “Manually entering new network settings” in the next section.

Figure 1.1 shows the Network indicator pop-up box.

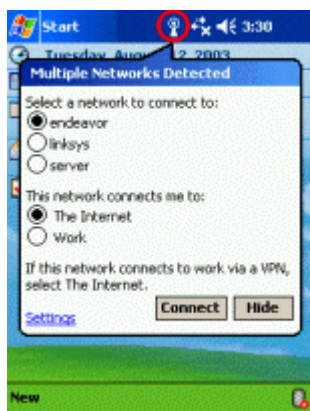


Figure 1.1: Network indicator

2. In the same pop-up box under “This network connects me to:” tap the Internet button (if the network connects to the Internet **without using** proxy settings) or the Work button (if the network **uses** proxy settings). If doubt exists about the whether the network uses proxy settings, then contact the system administrator. For additional information, see the section in this document entitled “Setting up the proxy server.”
3. If the display prompts for a Network key (WEP), then enter the key and tap Connect. (If there are any questions about the Network key, then contact the network administrator.)

h5500 series

Perform the following steps to connect to a WLAN network:

If at least one network is present on the Pocket PC, then the Network indicator icon () will appear in the Start bar. Tap the icon; when the “Multiple Networks Indicated” pop-up box appears, tap the desired network.

NOTE: A network can be set up manually, if desired. See “Manually entering new network settings” in the next section.

Figure 1.1 shows the Network indicator pop-up box.

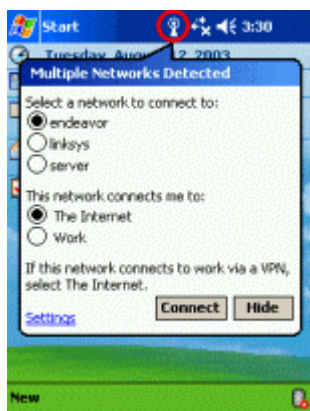


Figure 1.1: Network indicator

4. In the same pop-up box under "This network connects me to:" tap the Internet button (if the network connects to the Internet without using proxy settings) or the Work button (if the network uses proxy settings). If doubt exists about the whether the network uses proxy settings, then contact the system administrator. For additional information, see the section in this document entitled "Setting up the proxy server."
5. If the display prompts for a Network key (WEP), then enter the key and tap Connect. (If there are any questions about the Network key, then contact the network administrator.)

Manually entering new network settings

h4100 and h4300 series

To manually add settings to a wireless network, perform the following steps:

1. Turn on the WLAN on.
2. Tap the Connections icon (☛ or ☛*) at the top, tap Settings, tap the Advanced tab, and then tap Network Card.
3. On the "Configure Wireless Networks" screen, tap the Wireless tab at the bottom.
4. Still on the "Configure Wireless Networks" screen, in the "Wireless networks:" box, tap "Add New Settings..."
5. Tap the General tab at the bottom; in the Network name box, type the network name (SSID).




NOTE: If a network was detected in Step 2, then the SSID is automatically entered and cannot be changed.

6. In the "Connects to:" box, tap to select either "The Internet" (no proxy server is used), or "Work" (a proxy server **is** used).
7. If the network is an ad-hoc connection, then tap the "This is a device-to-computer (ad-hoc) connection" box.
8. If network authentication is required, then on the Configure Wireless Network screen, tap the Authentication tab. If in doubt about possible required authentication information, then contact the system administrator.
9. Select the type of network authentication to be used:
 - A. For data encryption, tap the "Data encryption (WEP Enabled)" checkbox.
 - B. To use Shared Key authentication, tap the "Network Authentication (Shared mode)" checkbox. Enter the Network Key in the "Network Key:" box.
 - C. If a network key is provided by the network automatically, then tap the "The Key is provided for me automatically" checkbox.
 - D. If IEEE 802.1x is supported by the network environment, then tap the "Enable network access using IEEE 802.1x" checkbox and then the appropriate authentication protocol (TLS, PEAP). 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.

h5400 series with Microsoft Pocket PC 2002

To manually add settings to a wireless network on the h5400 series with Microsoft Pocket PC 2002, perform the following steps:

1. On the Start screen, tap Start, Settings, tap the "Connections" tab at the bottom of the screen, and then tap the "Connections" icon.

2. On the "Connections" screen, select one of the following scenarios, as desired "Internet Settings" (a proxy **is not** used) or "Work Settings" (a proxy server **is** used).
 - A. Internet Settings:
 - I. Under the statement "When needed, automatically connect to the Internet using these settings:" tap the "Modify" box.
 - II. On the Settings screen, (under the "Modem" tab) tap "New..."
 - III. Tap the network/handheld device next to the statement "When needed, automatically connect to Work using these settings:"
 - IV. Tap "Modify..."
 - V. On the Settings screen (under the "Modem" tab), tap "New."
 - VI. On the "Make New Connection" screen, type a name for the new connection and then tap the dropdown arrow in the "Select a modem" box and select the desired modem.
 - VII. If changes must be made to the connection settings, then tap "Advanced."
 - VIII. On the Advanced screen, tap the "Port Settings" tab at the bottom of the screen.
 - IX. Still on the Advanced screen, tap the "TCP/IP" tab if an IP address is desired for the connection, or tap "Name Servers" on the Advanced screen if a server is desired for the connection.
 - X. When finished, tap the "return"  arrow on the keyboard and then tap "OK" and/or "Cancel" until the Start screen reappears.
 - B. Work Settings:
 - I. On the Work Settings screen, in the box that appears under the text "Create a connection, or tap and hold on an existing connection and select a desired action," tap "New."
 - II. On the "Make New Connection" screen, type a name for the new connection.
 - III. Still on the "Make New Connection" screen, and then tap the dropdown arrow in the "Select a modem" box and select the desired modem.
 - IV. When finished, tap the "return"  arrow on the keyboard and then tap "OK" until the Start screen reappears.
 - V. On the "Make New Connection" screen, type a name for the new connection and then tap the dropdown arrow in the "Select a modem" box and select the desired modem.
 - VI. If changes must be made to the connection settings, then tap "Advanced" and enter the appropriate information under the "Port Settings" tab at the bottom of the "Advanced" screen.
 - VII. Still on the Advanced screen, tap the TCP/IP tab if an IP address is desired for the connection, or tap "Name Servers" on the Advanced screen if a server is desired for the connection.
 - VIII. When finished, tap the "return"  arrow on the keyboard and then tap "OK" and/or "Cancel" until the Start screen reappears.
3. Still on the "Connections" screen, under the statement "When needed, automatically connect to Work" using these settings:" tap the "Modify" box.

h5400 with Microsoft Pocket PC 2003 ROM upgrade and h5500 series

To manually add settings to a wireless network on the h5400 series with Microsoft Pocket PC 2002, perform the following steps:

1. Turn the WLAN on (see instructions under Powering the WLAN on and off).
2. Tap the Connections icon (☛ or ☛*) at the top, tap Settings, tap the Advanced tab, and then tap "Network Card."
3. On the "Configure Wireless Networks" screen, tap the Wireless tab at the bottom.
4. Still on the "Configure Wireless Networks" screen, in the "Wireless networks:" box tap "Add New Settings..."
5. Tap the General tab at the bottom; in the Network name box, type the network name (SSID).

NOTE: If a network was detected in Step 2, then the SSID is automatically entered and cannot be changed.

6. In the Connects to: box, tap to select either "The Internet" (no proxy server is used), or "Work" (a proxy server **is** used).
7. If the network is an ad-hoc connection, then tap the "This is a device-to-computer (ad-hoc) connection" box.
8. If network authentication is required, then on the Configure Wireless Network screen, tap the Authentication tab. If in doubt about possible required authentication, then contact the system administrator.
9. Select the type of network authentication to be used:
 - A. For data encryption, tap the Data encryption (WEP Enabled) checkbox.
 - B. To use Shared Key authentication, tap the Network Authentication (Shared mode) checkbox. Enter the Network Key in the Network Key: box.
 - C. If a network key is provided by the network automatically, then tap the "The Key is provided for me automatically" checkbox.
 - D. If IEEE 802.1x is supported by the network environment, then tap the Enable network access using IEEE 802.1x checkbox and then tap the appropriate authentication protocol (TLS, PEAP, LEAP). 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.

Searching for networks to access

h4100 and h4300 series

Networks that have already been configured (preferred networks) are listed in the Wireless Networks box on the "Configure Wireless Networks screen." One can choose to connect only to preferred networks or have the iPAQ Pocket PC search for and connect to any available network.

Perform the following steps to search for available networks:

1. Tap the Connectivity icon in the Start bar (or, from the Start screen, tap Start, Settings, the Connections tab, and the Connections icon). Tap the Advanced tab, Network Card, and the Wireless tab.
2. In the Networks to access box, tap the type of network desired (All Available, Only access points, or only computer-to-computer).
3. To restrict the search to networks that have already been configured, **un**-check the "Automatically connect to non-preferred networks" checkbox.

NOTE: If the "Automatically connect to non-preferred networks checkbox" is checked, then the HP iPAQ Pocket PC will detect any new networks and provide the opportunity to configure them.

h5400 series with Microsoft Pocket PC 2002

Perform the following steps to locate the available networks on the HP iPAQ Pocket PC handheld device:

1. On the Start screen, tap Start, Settings, tap the Connections tab, and then tap the Connections icon.
2. Tap the drop-down arrow in the box that appears under the connection types (Internet settings or Work settings).
3. The available networks appear under each of the connection types.

NOTE: If the “Automatically connect to non-preferred networks checkbox” is checked, then the HP iPAQ Pocket PC will detect any new networks and provide the opportunity to configure them.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Networks that have already been configured (preferred networks) are listed in the Wireless Networks box on the “Configure Wireless Networks screen. One can choose to connect only to preferred networks or have the iPAQ Pocket PC search for and connect to any available network.

Perform the following steps to search for available networks:

1. Tap the Connectivity icon in the Start bar **or** from the Start screen; tap Start, Settings, the Connections tab, and the Connections icon. Tap the Advanced tab, Network Card, and the Wireless tab).
2. In the Networks to access box, tap the type of network desired (All Available, Only access points, or only computer-to-computer).
3. To restrict the search to networks that have already been configured, **un**-check the “Automatically connect to non-preferred networks” checkbox.

NOTE: If the “Automatically connect to non-preferred networks checkbox” is checked, then the HP iPAQ Pocket PC will detect any new networks and provide the opportunity to configure them.

h5500 series

Networks that have already been configured (preferred networks) are listed in the Wireless Networks box on the “Configure Wireless Networks screen. One can choose to connect only to preferred networks or have the iPAQ Pocket PC search for and connect to any available network.

Perform the following steps to search for available networks:

1. Tap the Connectivity icon in the Start bar (**or**, from the Start screen, tap Start, Settings, the Connections tab, and the Connections icon. Tap the Advanced tab, Network Card, and the Wireless tab).
2. In the Networks to access box, tap the type of network desired (All Available, Only access points, or only computer-to-computer).
3. To restrict the search to networks that have already been configured, **un**-check the “Automatically connect to non-preferred networks” checkbox.

NOTE: If the “Automatically connect to non-preferred networks checkbox” is checked, then the HP iPAQ Pocket PC will detect any new networks and provide the opportunity to configure them.

Managing wireless networks

Viewing or editing a network


HP iPAQ Pocket PC h4100 and h4300 series

To view or edit an existing or available wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, the Network Card, and then the Wireless tab. In the Wireless networks: box, tap name of the desired network to review or edit. **Or** on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Tap the network desired to review or edit.
3. If edits are made to the existing settings, then tap OK to save the new settings.

h5400 series with Microsoft Pocket PC 2002

To view or edit an existing or available wireless network, perform the following steps:

1. On the Start screen, tap Start, Settings, the Connections tab, and then the Connections icon.
2. On the Connections screen, tap "Modify..." under the drop-down box of each of the connection types (The Internet or Work Settings).
3. On the Settings screen of each connection type, available networks are listed.
4. To edit the network settings, tap the appropriate network.
5. Still on the Settings screen, tap and hold on the network connection to be edited.
6. When the Make New Connection screen appears, edits may be made to the network name and modem. To edit connection preferences, tap "Advanced" and the appropriate tab (Port Settings, TCP/IP, Name Servers).
7. When finished, tap the "return"  arrow on the keyboard and then tap "OK" and/or "Cancel" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

To view or edit an existing or available wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, Network Card, and then the Wireless tab. In the "Wireless networks:" box, tap name of the desired network to review or edit. **Or** on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Tap the network desired to review or edit.
3. If edits are made to the existing settings, then tap OK to save the new settings.

h5500 series

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, Network Card, and then the Wireless tab. In the "Wireless networks:" box, tap name of the desired network to review or edit. **Or** on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Tap the network desired to review or edit.
3. If edits are made to the existing settings, then tap OK to save the new settings.

Deleting a network

h4100 or h4300 series

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, Network Card, and then the Wireless tab.
3. In the "Wireless networks box:" tap the name of the desired network to delete, holding down the stylus until for a few seconds until the "Connect/Remove Settings" drop-box appears. Tap Remove Settings. Or on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Give the connection a name; tap the Wireless tab, highlight the desired connection to delete, and hold the stylus down a few seconds until the drop-box appears.
2. Tap Remove Settings.

h5400 series with Microsoft Pocket PC 2002

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, tap the Connection tab, and then the Connection icon.
3. On the Connections screen, tap the "Modify..." box beneath the desired connection type (Internet Settings or Work Settings).
4. Tap and hold down the stylus on the connection that is to be deleted.
5. Tap "Delete."

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, Network Card, and then the Wireless tab.
3. In the Wireless networks box: tap the name of the desired network, holding down the stylus for a few seconds until the Connect/Remove Settings drop-box appears. Tap Remove Settings. **Or** on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Give the connection a name; tap the Wireless tab, highlight the desired connection to delete, and hold the stylus down a few seconds until the drop-box appears.
4. Tap "Remove Settings."

h5500 series

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the Connectivity pop-up box, tap Settings, the Advanced tab, Network Card, and then the Wireless tab.
3. In the "Wireless networks box:" tap the name of the desired network to delete, holding down the stylus for a few seconds until the "Connect/Remove Settings" drop-box appears. Tap "Remove Settings." **Or** on the Start screen tap Settings, the Connections tab, the Connections icon, Advanced, and Network Card. Give the connection a name; tap the Wireless tab,

highlight the desired connection to delete, and hold the stylus down a few seconds until the drop-box appears. Tap "Remove Settings."

Monitoring signal strength and status

h4100 and h4300 series

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h4100 or h4300 series handheld device and the access point WLAN connection:

NOTE: The Signal strength icon will only display when a connection is present.

Tap the Connections icon (* or **) in the Start bar. The Connectivity box displays the type of network the HP iPAQ Pocket PC is connected to (Work or Internet). Displayed next to the network type (either Internet or Work) is the field "Wireless Card," followed by some vertical green bars. Four bars indicate the strongest signal strength.

Figure 1.2 shows the WLAN signal strength indicator on the HP iPAQ Pocket PC h4100 and h4300 series.



Figure 1.2: Signal strength indicator

1. To make changes to the connection, tap Settings.
2. To exit the Connectivity box, tap the Hide button.

h5400 series with Microsoft Pocket PC 2002

Perform the steps in either of the following scenarios to view the signal strength between the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device and the access point WLAN connection:

NOTE: The Signal strength icon will only display when a connection is present.

1. On the Start screen, tap Start and then tap the "iPAQ Wireless" icon in the Start menu.
 - A. On the iPAQ Wireless screen, tap the "iPAQ WLAN" icon.
 - B. The signal strength appears in a triangular icon at the bottom right-hand of the screen. The signal strength displays as a percentage beneath the icon and as a colored area within the icon. A green color indicates the stronger signal.
2. On the Start screen, tap the WLAN icon at the bottom right-hand of the screen.
 - A. Tap "Setup" in the pop-up box that appears.

- B. The signal strength appears in a triangular icon at the bottom right-hand of the screen. The signal strength displays as a percentage beneath the icon and as a colored area within the icon. A green color indicates the stronger connection signal.

Figure 1.2 shows the WLAN signal strength indicator for the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002.

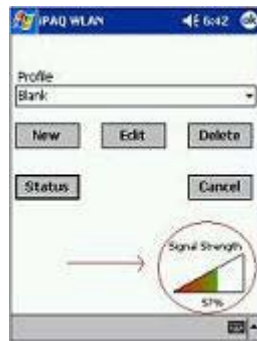


Figure 1.2 Signal strength indicator

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h5400 series Microsoft Pocket PC 2003 ROM upgrade handheld device and the access point WLAN connection:

NOTE: The Signal strength icon will only display when a connection is present.

1. Tap the Connections icon (or) in the Start bar. The Connectivity box displays the type of network the HP iPAQ Pocket PC is connected to (Work or Internet). Displayed next to the network type (either Internet or Work) is the field "Wireless Card," followed by some vertical green bars. Four bars display the strongest connection signal.

Figure 1.2 shows the WLAN signal strength indicator for the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade.



Figure 1.2: Signal strength indicator

1. To make changes to the connection, tap Settings.
2. To exit the Connectivity box, tap the Hide button.

h5500 series

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h5500 series handheld device and the access point WLAN connection:

1. Tap the Connections icon (* or **) in the Start bar.

The Connectivity box displays the type of network the HP iPAQ Pocket PC is connected to (Work or Internet). Displayed next to the network type (either Internet or Work) is the field "Wireless Card," followed by some vertical green bars. Four bars display the strongest connection signal.

NOTE: The Signal strength icon will only display when a connection is present.

Figure 1.2 shows the WLAN signal strength indicator



Figure 1.2: Signal strength indicator

2. To make changes to the connection, tap Settings.
3. To exit the Connectivity box, tap the Hide button.

Network settings

Locating an IP address

h4100 or h4300 series

Perform the following steps to identify the IP address of a wireless network on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. Turn on the WLAN.
2. Establish a WLAN connection.
3. Tap the Connections icon, the Advanced tab, Network Card, and then the Network Adapters tab.
4. Tap the appropriate adapter in the "Tap an adapter to modify settings:" box.
5. When the iPAQ Wireless Adapter screen appears, tap "Use server-assigned IP address." The IP address displays in the IP address box.

Figure 1.3 shows the IP address display screen.



Figure 1.3: IP address

H5400 series with Microsoft Pocket PC 2002

Perform the following steps to identify the IP address of a wireless network:

1. Turn on the WLAN
2. Establish a WLAN connection.
3. On the Start screen, tap Start, Settings, the Connection tab, and then the Connection icon.
4. Tap the connection for which the IP address is desired.
5. Tap the "Modify..." box beneath the connection.
6. On the Internet Settings screen, tap the connection name and then tap "Advanced..."
7. On the "Advanced..." screen, tap the TCP/IP or Name Servers tab to view IP addresses.
8. Tap "OK" and "Cancel" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to identify the IP address of a wireless network:

1. Turn on the WLAN.
2. Tap the Connectivity icon, Settings, and then tap the desired network to establish a connection.
3. Tap the Connections icon, Advanced, Network Card, and then tap the Network Adapters tab.
4. Tap the appropriate adapter in the "Tap an adapter to modify settings:" box.
5. When the iPAQ Wireless Adapter screen appears, tap "Use server-assigned IP address." The IP address displays in the IP address box.

Figure 1.3 shows the IP address display screen.



Figure 1.3: IP address

h5500 series

Perform the following steps to identify the IP address of a wireless network on an HP iPAQ Pocket PC h5500 series handheld device:

1. Turn on the WLAN.
2. Tap the Connectivity icon, Settings, and then tap the desired network to establish a connection.
3. Tap the Connections icon, Advanced, Network Card, and then tap the Network Adapters tab.
4. Tap the appropriate adapter in the "Tap an adapter to modify settings: box.
5. When the iPAQ Wireless Adapter screen appears, tap "Use server-assigned IP address." The IP address displays in the IP address box.

Figure 1.3 shows the IP address display screen.

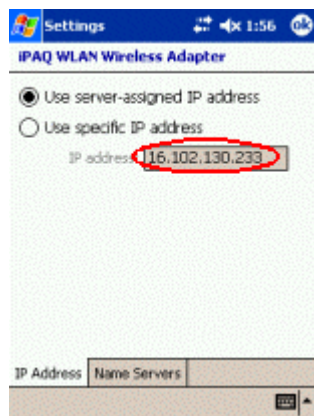


Figure 1.3: IP address

Changing TCP/IP settings

h4100 and h4300 series

NOTE: Most Internet Service Providers (ISPs) and private networks use dynamically-assigned IP addresses. Unless the ISP or private network does not use dynamically-assigned IP addresses, the TCP/IP settings require no change. If unsure about TCP/IP settings using dynamically-assigned IP addresses, then contact the network administrator.

Perform the following steps to change the TCP/IP settings on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. If the IP address, subnet mask, and/or default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap the Connections icon, Settings, the Advanced tab, and then tap Network Card. On the Configure Wireless Networks screen, tap Network Adapters. **Or**, on the Start screen, tap Start, Settings, the Connection tab, and then the Connections icon; tap the Advanced tab, Network Card, and then the Network Adapters tab. On the Configure Wireless Networks screen, tap the Network Adapters tab.
4. Still on the Configure Wireless Networks screen, tap either The Internet (the network uses **no** proxy server) or Work (network **uses** a proxy server) in the "My network card connects to..." drop-down box.

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network, then tap Work.

5. In the "Tap an adapter to modify settings" box, tap iPAQ WLAN Wireless Adapter.
6. Tap the IP Address tab.
7. Tap "Use specific IP address" and then enter the appropriate information.
8. Tap OK to save the settings.

h5400 series with Microsoft Pocket PC 2002

NOTE: Most Internet Service Providers (ISPs) and private networks use dynamically-assigned IP addresses. Unless the ISP or private network does not use dynamically-assigned IP addresses, the TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically-assigned IP addresses then contact the network administrator.

Perform the following steps to change the TCP/IP settings on the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device:

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connection tab, and then the Connection icon.
3. On the Connections screen, tap the connection for which the IP address is desired.
4. Tap the "Modify..." box beneath the connection.
5. On the Internet Settings screen, tap the connection name and then tap "Advanced..."
6. On the "Advanced..." screen, tap the TCP/IP tab.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

NOTE: Most Internet Service Providers (ISPs) and private networks use dynamically-assigned IP addresses. Unless the ISP or private network does not use dynamically-assigned IP addresses, the

TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically-assigned IP addresses, then contact the network administrator.

Perform the following steps to change the TCP/IP settings on the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device:

1. If the IP address, subnet mask, and/or default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap the Connections icon, Settings, the Advanced tab, and then tap Network Card. On the Configure Wireless Networks screen, tap Network Adapters. **Or**, on the Start screen, tap Start, Settings, the Connection tab, and the Connections icon; tap the Advanced tab, Network Card, and then tap the Network Adapters tab.
4. On the Configure Wireless Networks screen, tap the Network Adapters tab.
5. Still on the Configure Wireless Networks screen, tap either "The Internet" (the network uses **no** proxy server) or "Work" (network **uses** a proxy server) in the "My network card connects to..." drop-down box.

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network, then tap Work.

6. In the "Tap an adapter to modify settings" box, tap "iPAQ WLAN Wireless Adapter."
7. Tap the IP Address tab.
8. Tap "Use specific IP address" and then enter the appropriate information.
8. Tap "OK" to save the settings.

h5500 series

NOTE: Most Internet Service Providers (ISPs) and private networks use dynamically-assigned IP addresses. Unless the ISP or private network does not use dynamically-assigned IP addresses, the TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically-assigned IP addresses then contact the network administrator.

Perform the following steps to change the TCP/IP settings on an HP iPAQ Pocket PC h5500 series handheld device:

1. If the IP address, subnet mask, and/or default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap the Connections icon, Settings, the Advanced tab, and then tap Network Card. On the Configure Wireless Networks screen, tap Network Adapters. **Or**, on the Start screen, tap Start, Settings, the Connection tab, and the Connections icon; tap the Advanced tab, Network Card, and then the Network Adapters tab.
4. On the Configure Wireless Networks screen, tap the Network Adapters tab.
5. Still on the Configure Wireless Networks screen, tap either "The Internet" (the network uses **no** proxy server) or "Work" (network **uses** a proxy server) in the "My network card connects to..." drop-down box.

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network, then tap Work.

6. In the "Tap an adapter to modify settings" box, tap "iPAQ WLAN Wireless Adapter."
7. Tap the "IP Address" tab.
8. Tap "Use specific IP address" and then enter the appropriate information.

9. Tap "OK" to save the settings.

Changing DNS and WINS settings

h4100 and h4300 series

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h4100 and h4300 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h4100 and h4300 series handheld devices:

1. Contact the ISP or network administrator to:
 - a. Determine the correct name resolution
 - b. Obtain the specific server IP address
 - c. Determine if alternate addresses are available

NOTE: An alternate address may be enabled to establish a connection when the primary server is unavailable.

2. Turn on the WLAN.
3. Tap the Connections icon, Settings, the Advanced tab, Network Card, and then tap the Network Adapters tab.
4. In the "My network card connects to..." drop-down box, tap either "The Internet" (**no** proxy server is used) or "Work" (proxy server **is** used).

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network at work, then tap Work.

5. In the "Tap an adapter to modify settings" box, tap "iPAQ WLAN Wireless Adapter."
6. Tap the Name Servers tab and enter the appropriate information.
7. Tap OK to save the new settings.

h5400 series with Microsoft Pocket PC 2002

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5400 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld devices:

1. Contact the ISP or network administrator to:
 - A. Determine the correct name resolution
 - B. Obtain the specific server IP address
 - C. Determine if alternate addresses are available
2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab, and the Connections icon.

4. Tap the appropriate connection in the box that appears next to the network/handheld device and beneath the text "When needed, automatically connect to Work using these settings:"
5. Tap the "Modify..." box under the box that contains the connection just selected.
6. On the Work Settings screen, tap the "Proxy Settings" tab at the bottom of the screen.
7. Still on the Work Settings screen, tap the "This network connects to the Internet" box, tap the "This network uses a proxy server to connect to the Internet" box, and then enter the proxy server in the "Proxy server:" box, if appropriate.
8. Tap "Advanced". Server information will appear on the Work Settings screen.
9. Tap "OK" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5400 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld devices:

1. Contact the ISP or network administrator to:
 - A. Determine the correct name resolution
 - B. Obtain the specific server IP address
 - C. Determine if alternate addresses are available

NOTE: An alternate address may be enabled to establish a connection when the primary server is unavailable.

2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab, and then the Connections icon.
4. On the Connections screen, tap the Advanced tab, Network Card, and then the Network Adapters tab.
5. In the "My network card connects to..." drop-down box, tap either "The Internet" (**no** proxy server is used) or "Work" (proxy server **is** used).

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network at work, then tap Work.

6. In the "Tap an adapter to modify settings" box, tap "iPAQ WLAN Wireless Adapter."
7. Tap the Name Servers tab and enter the appropriate information.
8. Tap "OK" to save the new settings.

h5500 series

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5400 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5400 series handheld devices:

1. Contact the ISP or network administrator to:
 - A. Determine the correct name resolution
 - B. Obtain the specific server IP address
 - C. Determine if alternate addresses are available

NOTE: An alternate address may be enabled to establish a connection in which the primary server is unavailable.

- D. Turn on the WLAN.
- E. Tap the Connections icon, Settings, the Advanced tab, Network Card, and then the Network Adapters tab.
- F. In the "My network card connects to..." drop-down box, tap either "The Internet" (**no** proxy server is used) or "Work" (proxy server **is** used).

NOTE: If connecting to the ISP at home, then tap The Internet. If connecting to a private network such as a corporate network at work, then tap Work.

5. In the "Tap an adapter to modify settings" box, tap "iPAQ WLAN Wireless Adapter."
6. Tap the Name Servers tab and enter the appropriate information.

Changing ISP settings

h4100 and h4300 series


To change the ISP settings on an HP iPAQ h4100 or h4300 series handheld device, perform the following steps:

1. Tap Start, Settings, the Connections tab, the Connections icon, and then the Advanced tab.
2. In the Connections screen, tap "Select Networks" in the "Select Networks: box that appears under the text, Networks are groups of settings used by programs to automatically connect to an ISP or private network.
3. On the Network Management screen, tap "My Work Network" and then the "New..." box beneath the connection.
4. Tap the "Modem" or "Proxy Settings" tabs to change ISP settings.
 - A. **To add a new modem connection:**
 - I. On the Connections screen, tap "Add a new modem connection" and then enter a name for the connection in the "Enter a name for the connection:" box.
 - II. Select the desired modem in the "Select a modem:" drop-down box.
 - III. Tap Next.
 - IV. On the "My Connection" screen, enter the appropriate country code (1 for the U.S.), area code, and telephone number to be dialed for the connection; tap Next.
 - V. Type the desired user name for the connection.
 - VI. Type the desired password for the connection.
 - VII. Type the domain, if a domain was provided by the ISP or network administrator.
 - VIII. Tap "Finish."
 - B. **To change an existing connection:**

- I. On the Connections screen, tap "Manage existing connections."
 - II. To change the connection name, tap "text," tap "Edit," and type the new name.
- C. To delete an existing connection:**
- II. On the "Connections" screen, tap "Manage existing connections."
 - III. Locate the connection in the Name box and tap the name, holding the stylus in place for a few seconds until the "Delete/Connect" box appears. Tap "Delete" to delete the connection.
- D. To establish a WLAN connection using the modem connection just added or changed:**
- I. On the "Connections" screen, tap "Manage existing connections."
 - II. Locate the connection in the Name box and tap the name, holding the stylus in place for a few seconds until a "Delete/Connect" box appears. Tap "Connect" to complete the connection.

h5400 series with Microsoft Pocket PC 2002

To change the ISP settings on an HP iPAQ h5400 with Microsoft Pocket PC 2002 series handheld device, perform the following steps:

- 1. To add a new modem connection:**
 - A. On the Start screen, tap Start, Settings, the Connections tab, and then the Connections icon.
 - B. On the Connections screen, tap the "Modify..." box under the desired connection type (Internet Settings or Work Settings).
 - C. On the Settings screen (either Internet or Work), tap the Modem tab at the bottom of the screen and tap "New..."
 - D. On the "Make New Connection screen," type a name for the connection in the "Enter a name for the connection:" box and select the appropriate modem from the "Select a modem:" box.
 - E. Tap the "Advanced" box.
 - F. On the Advanced screen, tap the "Name Servers" tab and tap "Use server-assigned addresses."
 - G. Tap "OK" until the Start screen reappears.
- 2. To change an existing connection:**
 - A. On the Connections screen, tap the drop-down box of the desired connection type (Internet Settings or Work Settings) and tap the desired connection to change.
 - B. Tap the "Modify..." box under the desired connection.
 - C. On the Connection screen, tap the Proxy Settings tab at the bottom of the screen.
 - D. On the Connection screen, tap the "This network connects to the Internet" check-box, tap the "This network uses a proxy server to connect to the Internet," and enter the proxy server in the "Proxy server:" box.
 - E. Tap "Advanced."
 - F. On the Connection screen, make the desired changes and tap the "enter" arrow .
- 3. To delete an existing connection:**
 - A. On the Connections screen, tap the drop-down box of the desired connection type (Internet Settings or Work Settings) and tap the desired connection to delete.

- B. Tap the General tab at the bottom of the screen and then tap the "Delete Settings" box.
- C. When the Connection Manager pop-up box appears with the message "Do you want to permanently delete these settings?" tap Yes.
- 4. To establish a WLAN connection using the modem connection just added or changed:
 - A. On the Connections screen, select the connection just created.
 - B. Tap the "Connect" box.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

To change the ISP settings on an HP iPAQ h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device, perform the following steps:

- 1. On the Start screen, tap Start, Settings, the Connections tab, and then the Connections icon.
- 2. Under "My ISP" tap "Add a new modem connection" to establish a new modem connection or "Manage existing connections" if changes to an existing connection are desired.
 - A. **To add a new modem connection:**
 - I. On the "Make New Connection" screen, give the connection a name by entering the name in the "Enter a name for the connection:" box.
 - II. Select the desired modem in the "Select a modem:" drop-down box.
 - III. Tap Next.
 - IV. On the "My Connection" screen, enter the appropriate country code (1 for the U.S.), area code, and telephone number to be dialed for the connection; tap Next.
 - V. Type the desired user name for the connection.
 - VI. Type the desired password for the connection.
 - VII. Type the domain, if a domain was provided by the ISP or network administrator.
 - VIII. Tap "Finish."
 - B. **To change an existing connection:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. To change the connection name, tap "text," tap "Edit," and type the new name.
 - C. **To delete an existing connection:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. Locate the connection in the Name box and tap the name, holding the stylus in place for a couple of seconds until a "Delete/Connect" box appears. Tap "Delete" to delete the connection.
 - D. **To establish a WLAN connection using the modem connection just added or changed:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. Locate the connection in the Name box and tap the name, holding the stylus in place for a couple of seconds until a "Delete/Connect" box appears. Tap "Connect" to complete the connection.

h5500 series

To change the ISP settings on an HP iPAQ h5500 series handheld device, perform the following steps:

1. Tap Start, Settings, the Connections tab, and then the Connections icon.
2. Under "My ISP" tap "Add a new modem connection" to establish a new modem connection or "Manage existing connections" if changes to an existing connection are desired.
 - A. **To add a new modem connection:**
 - I. On the "Make New Connection" screen, give the connection a name by entering the name in the "Enter a name for the connection:" box.
 - II. Select the desired modem in the "Select a modem:" drop-down box.
 - III. Tap Next.
 - IV. On the "text" screen, enter the appropriate country code (1 for the U.S.), area code, and telephone number to be dialed for the connection; tap Next.
 - V. Type the desired user name for the connection.
 - VI. Type the desired password for the connection.
 - VII. Type the domain, if a domain was provided by the ISP or network administrator
 - VIII. Tap "Finish."
 - B. **To change an existing connection:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. To change the connection name, tap "Next," tap "Edit," and type the new name.
 - C. **To delete an existing connection:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. Locate the connection in the Name box and tap it. Hold the stylus in place for a few seconds until a "Delete/Connect" box appears.
 - III. Tap "Delete" to delete the connection.
 - D. **To establish a WLAN connection using the modem connection just added or changed:**
 - I. On the "Connections" screen, tap "Manage existing connections."
 - II. Locate the connection in the Name box and tap the name, holding the stylus in place for a few seconds until a "Delete/Connect" box appears. Tap "Connect" to complete the connection.

Manually entering new settings

h4100, h4300, h5400, and h5500 series

A wireless network can be added manually, if desired.

To manually add a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the Connections icon, the Advanced tab, Network Card, the Wireless tab at the bottom of the screen, and then "Add New Settings."
3. Tap the General tab and enter a network name (Service Set Identifier or SSID). An SSID is a sequence of characters that uniquely names a WLAN.

NOTE: If a network was detected in Step 2, then the SSID automatically populates the network name field and cannot be changed.

4. In the "Connects to:" box, select the desired location to connect to (the Internet or work).

5. If an ad-hoc connection is desired, then tap the "This is a device-to-computer (ad-hoc) connection" box.
6. If authentication information is required, then tap the Authentication tab on the Configure Wireless Network screen and enter the information. If authentication information is unknown, then consult the network administrator.
7. Select the type of network authentication to use:
 - A. To use data encryption, tap the "Data encryption (WEP enabled)" checkbox.
 - B. To use Shared Key authentication, tap the "Network Authentication (Shared mode)" box. Enter the designated authentication key in the "Network Key:" box.
 - C. If a network key is provided by the network automatically, then tap the "The Key is provided for me automatically" box.
 - D. For increased security, tap the "Enable network access using IEEE 802.1X" box. This option should be checked only if it is supported by the network environment. Ask the network administrator if in doubt.

Setting up and configuring authentication protocols

h4100, h4300, h5400, and h5500 series

Perform the following steps to set up and configure an authentication protocol on the HP iPAQ Pocket PCs:

1. Turn on the WLAN.
2. Tap Start, Settings, the Connections tab, the Connections icon, the Advanced tab, Network Card, and then "add new settings." Enter the SSID name in the Network Name field.
3. Tap the Authentication tab and ensure that "Data Encryption (WEP Enabled)" and "The key is provided automatically" are both checked.
4. Tap the "Enable network access using IEEE 802.1x," tap the pull-down arrow, and then select the desired protocol.
5. Tap "OK" twice to exit the "Configure Network Authentication" window and "configure wireless networks" window.
6. Tap the Select Networks box to open the Network Management window. Under "Programs that automatically connect to the Internet should connect using" tap the down arrow and select "My Work Network." Tap "OK" three times to return to the Start screen.

Perform a soft reset of the Pocket PC. When the wireless card associates with an Access Point, the Logon Window pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the "domain" field blank, and tap the "Save Password" box.

VPN Server Connections

Creating a VPN connection

h4100 and h4300 series

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

NOTE: At this point, one may use the New Connection wizard to set up a VPN connection, or continue with the steps below. The New Connection wizard provides online help and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, Connections, and the Tasks tab.
3. Under "My Work Network," tap "Add a new VPN server connection."
4. On the "Make New Connection" screen, enter a name for the connection in the "Name:" box. Enter the appropriate information provided by the network administrator in the "Host name/IP:" box.
5. Tap the appropriate VPN type received from the network administrator and then tap Next.
6. On the My VPN screen, tap either "A certificate on this device" or "A pre-shared key." If a pre-shared key was tapped, enter the key number in the box.
7. On the My VPN screen, enter a user name, password, and domain provided by the network administrator.
8. Tap Finish.
9. Follow the instructions in the New Connection wizard.

NOTE: For online Help for any screen in the New Connection wizard or while changing settings, tap the question mark (?).

h 5400 series with Microsoft Pocket PC 2002

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

1. Turn on the WLAN.
2. On the Settings screen, tap Start, Settings, the Connections tab at the bottom of the screen, and then tap the Connections icon.
3. In the "Work Settings" box next to the network/handheld device icon and beneath the text "When needed, automatically connect to Work using these settings:" tap the "Modify..." box.
4. On the Work Settings screen, tap the VPN tab at the bottom of the screen.
5. Still on the Work Settings screen, tap "New..." in the box beneath the text "Create a connection, or tap and hold on an existing connection and select a desired action."
6. On the "Make New Connection" screen, in the "Enter a name for the connection:" box, type a name for the VPN connection.
7. Still on the "Make New Connection" screen, enter the appropriate information in the "Host name or IP address of destination:" box.
8. Tap the "Advanced..." box.
9. On the Advanced screen, tap the TCP/IP tab at the bottom of the screen. Tap "Use server-assigned IP address" or "Use specific IP address" as appropriate. If "Use specific IP address" was chosen, then enter the IP address in the box.
10. Still on the Advanced screen, tap the "Use Slip," "Use software compression," and "Use IP header compression" boxes as appropriate.
11. Still on the Advanced screen, tap the "Name Servers" tab at the bottom of the screen.
12. Tap either the "Use server-assigned address" or "Use specific server address" and enter the appropriate information.
13. Tap "OK" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the

VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

NOTE: At this point, one may use the New Connection wizard to set up a VPN connection, or continue with the steps below. The New Connection wizard provides online help and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, Connections, and the Tasks tab.
3. Under "My Work Network", tap "Add a new VPN server connection."
4. On the "Make New Connection" screen, enter a name for the connection in the "Name:" box. Enter the appropriate information provided by the network administrator in the "Host name/IP:" box.
5. Tap the appropriate VPN type received from the network administrator and then tap Next.
6. On the "My VPN" screen, tap either "A certificate on this device" or "A pre-shared key." If a pre-shared key was tapped, enter the key number in the box.
7. On the My VPN screen, enter a user name, password, and domain provided by the network administrator.
8. Tap Finish.
9. Follow the instructions in the New Connection wizard.

NOTE: For online Help for any screen in the New Connection wizard or while changing settings, tap the question mark (?).

h5500 series

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

NOTE: At this point, one may use the New Connection wizard to set up a VPN connection, or continue with the steps below. The New Connection wizard provides online help and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, Connections, and the Tasks tab.
3. Under "My Work Network," tap "Add a new VPN server connection."
4. On the "Make New Connection" screen, enter a name for the connection in the "Name:" box. Enter the appropriate information provided by the network administrator in the "Host name/IP:" box.
5. Tap the appropriate VPN type received from the network administrator and then tap Next.
6. On the My VPN screen, tap either "A certificate on this device" or "A pre-shared key." If a pre-shared key was tapped, enter the key number in the box.
7. On the My VPN screen, enter a user name, password, and domain provided by the network administrator.
8. Tap Finish.
9. Follow the instructions in the New Connection wizard.

NOTE: For online Help for any screen in the New Connection wizard or while changing settings, tap the question mark (?). Changing a VPN connection

Changing a VPN connection

h4100 and h4300 series

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then the Tasks tab.
3. On the Connections screen, under "My Work Network," tap "Manage existing connections."
4. Tap the VPN tab.
5. Tap the desired VPN connection to change and then tap "Edit..."
6. On the My VPN screen, enter a name for the connection in the "Name:" box (for example, a company name).
7. Still on the My VPN screen, enter the VPN server name or IP address in the "Host name/IP:" box.
8. Next to "VPN type:" tap the authentication type desired (IPSec/L2TP or PPTP). If unsure which option to choose then contact the network administrator.
9. Tap Next.
10. If "IPSec/L2TP" was chosen in step 8, then tap the appropriate authentication type. If a pre-shared key was selected, then enter the key provided by the network administrator and then tap Next.

NOTE: If PPTP was selected in the previous screen, then skip the following step.

11. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
12. To change advanced settings, tap the Advanced button. Advanced settings should be changed **only** if one of the following situations exists:
 - A. The server to which the connection is made does **not** use dynamically-assigned IP addresses, so the TCP/IP settings must be entered.
 - B. The DNS or WINS settings on the server must be changed.
 - C. Tap Finish.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h5400 series handheld device:

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then the Tasks tab.
3. On the Connections screen under "My Work Network," tap "Manage existing connections."
4. Tap the VPN tab.
5. Tap the desired VPN connection to change and then tap "Edit..."
6. On the My VPN screen, enter a name for the connection in the "Name: box" (for example, a company name).
7. Still on the My VPN screen, enter the VPN server name or IP address in the "Host name/IP:" box.
8. Next to VPN type: tap the authentication type desired (IPSec/L2TP or PPTP). If unsure which option to choose then contact the network administrator.

9. Tap Next.
10. If "IPSec/L2TP" was chosen in step 8, then tap the appropriate authentication type. If a pre-shared key was selected, then enter the key provided by the network administrator and tap Next.

NOTE: If PPTP was selected in the previous screen, then skip the following step.

11. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
12. To change advanced settings, tap the Advanced button. Advanced settings should be changed **only** if one of the following situations exists:
 - A. The server to which the connection is made does **not** use dynamically-assigned IP addresses, so the TCP/IP settings must be entered.
 - B. The DNS or WINS settings on the server must be changed.
13. Tap Finish.

h5500 series

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h5500 series handheld device:

1. Turn on the WLAN.
2. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then tap the Tasks tab.
3. On the Connections screen, under My Work Network, tap "Manage existing connections."
4. Tap the VPN tab.
5. Tap the desired VPN connection to change and then tap "Edit..."
6. On the My VPN screen, enter a name for the connection in the "Name: box" (for example, a company name).
7. Still on the My VPN screen, enter the VPN server name or IP address in the "Host name/IP:" box.
8. Next to "VPN type:" tap the authentication type desired (IPSec/L2TP or PPTP). If unsure which option to choose then contact the network administrator.
9. Tap Next.
10. If "IPSec/L2TP" was chosen in step 8, then tap the appropriate authentication type. If a pre-shared key was selected, then enter the key provided by the network administrator and then tap Next.

NOTE: If PPTP was selected in the previous screen, then skip the following step.

11. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
12. To change advanced settings, tap the Advanced button. Advanced settings should be changed **only** if one of the following situations exists:
 - A. The server to which the connection is made does **not** use dynamically-assigned IP addresses, so the TCP/IP settings must be entered.
 - B. The DNS or WINS settings on the server must be changed.
13. Tap Finish.

Starting a VPN connection

h4100 and h4300 series


If an HP iPAQ Pocket PC h4100 or h4300 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then the Tasks tab.
4. On the Connections screen under "My Work Network," tap "Edit my proxy server," and then tap the Proxy Settings tab.
5. Tap the "This network connects to the Internet" and "This network uses a proxy server to connect to the Internet" checkboxes.
6. In the Proxy server box, enter the proxy server name received from the network administrator. Tap "OK" if the port number or proxy server type settings do not require changes, and skip step number seven.
7. If port number or proxy server type settings must be changed, then tap "Advanced" and make the necessary settings changes. Tap "OK."

h5400 series with Microsoft Pocket PC 2002

If an HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab at the bottom of the screen, and then the Connections icon.
4. On the Connections screen, tap the Work Settings connection box, which appears next to the network/handheld device icon and beneath the text, "When needed, automatically connect to Work using these settings:"
5. Tap the "Modify..." box under the connection and then the "Proxy Settings" tab at the bottom of the screen.

6. On the Settings screen, tap the check-box "This network connects to the Internet" and "This network uses a proxy server to connect to the Internet."
7. Enter the proxy server information obtained from the network administrator in the "Proxy server:" box and tap "Advanced."
8. Make necessary changes to the settings and tap the "enter" arrow .
9. Tap "OK" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

If an HP iPAQ Pocket PC h5400 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then the Tasks tab.
4. On the Connections screen, under "My Work Network," tap "Edit my proxy server," and then the Proxy Settings tab.
5. Tap the "This network connects to the Internet" and "This network uses a proxy server to connect to the Internet" checkboxes.
6. In the Proxy server box, enter the proxy server name received from the network administrator. Tap "OK " if the port number or proxy server type settings do not require changes, and skip step number seven.
7. If port number or proxy server type settings must be changed, then tap Advanced and make the necessary settings changes. Tap "OK."

h5500 series

If an HP iPAQ Pocket PC h5500 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the Start screen, tap Start, Settings, the Connections tab, the Connections icon, and then the Tasks tab.

4. On the Connections screen, under “My Work Network,” tap “Edit my proxy server,” and then the Proxy Settings tab.
5. Tap the “This network connects to the Internet” and “This network uses a proxy server to connect to the Internet” checkboxes.
6. In the Proxy server box, enter the proxy server name received from the network administrator. Tap “OK” if the port number or proxy server type settings do not require changes, and skip step number seven.
7. If port number or proxy server type settings must be changed, then tap “Advanced” and make the necessary settings changes. Tap “OK”.

Working with HP-supported wireless authentication protocols

Instructions for configuring an HP iPAQ Pocket PC with a high security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions, arranged by HP iPAQ Pocket PC series, are intended as a roadmap to help the user get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and/or implementation direction from third party software companies such as Cisco Systems. Assistance may also be obtained from the HP website (www.hp.com) and the Cisco Systems website (www.cisco.com).

h4100 and h4300 series

Perform the following steps to begin setting up an HP-supported authentication protocol on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. Turn on the WLAN.
 - A. Tap Start, “iPAQ wireless”, and then tap the “WLAN” button (if the WLAN is on, then the WLAN icon will be green; if the WLAN is off, then the WLAN icon will be orange).
 - B. Tap the “X” to return to the Start screen.
2. At the Start screen, tap Settings and then the Connections tab.
3. Tap the Connections icon, the Advanced tab, and then Network Card.
4. On the “Configure Wireless Networks” screen, in the “Wireless network” box, highlight the appropriate default setting or create a new setting.
5. On the Configure Wireless Network screen, select the appropriate network and tap the Authentication tab.
6. On the Configure Network Authentication screen:
 - A. Check “Data encryption (WEP enabled)”
 - B. **Un**-check “Network Authentication (Shared mode)”
 - C. Check “The key is provided for me automatically” or enter the appropriate Network key
 - D. Check “Enable network access using IEEE 802.1x”
 - E. Tap the desired protocol in the “EAP type:” drop-down box

h5400 series with Microsoft Pocket PC 2002

Perform the following steps to set up an HP-supported authentication protocol on an HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device:

1. Turn on the WLAN.

2. Tap Start, "iPAQ Wireless," and then tap the "iPAQ WLAN" icon. **Or**, tap Start and then the "iPAQ WLAN" icon (if the WLAN is on, then the WLAN icon will be green; if the WLAN is off, then the WLAN icon will be orange).
3. On the iPAQ WLAN screen, highlight the appropriate default profile or create a new profile, and then tap the "Edit" box.
4. When the Profile Wizard screen appears, either enter information for a new profile, or tap the "Next" box.
5. Still on the Profile Wizard screen, tap either "Use server-assigned IP address" or "Use specific IP address" and enter the appropriate information.
6. Tap the "Next" box.
7. Still on the Profile Wizard screen, tap the "Wireless Encryption (WEP)" drop-down box, tap the appropriate protocol, and then tap the "FINISH" box.
8. Tap "OK" and/or "Cancel" until the Start screen reappears.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

Perform the following steps to set up an HP-supported authentication protocol on an HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device:

1. Turn on the WLAN.
 - A. Tap Start, "iPAQ wireless," and then tap the "WLAN" button (if the WLAN is on, then the WLAN icon will be green; if the WLAN is off, then the WLAN icon will be orange).
 - B. Tap the "X" to return to the Start screen.
2. On the Start screen, tap Settings and then the Connections tab.
3. Tap the Connections icon, the Advanced tab, and then "Network Card."
4. In the "Configure Wireless Networks" box, highlight the appropriate default setting or create a new setting, and then tap "Authentication."

NOTE: The HP iPAQ Pocket PC h5400 series handheld device has one of two ROM releases. The setup steps are identical for both ROM releases through step three. Beginning with step four, however, the Configure Wireless Networks screen may differ slightly, as demonstrated in four-A and four-B.

- A. On the Configure Network Authentication screen:
 - I. Check "Data encryption (WEP enabled)"
 - II. **Un-check** "Network Authentication (Shared mode)"
 - III. Check "The key is provided for me automatically" or enter the appropriate Network key
 - IV. Check "Enable network access using IEEE 802.1x"
 - V. Tap the desired protocol in the "EAP type:" drop-down box
- B. On the Configure Wireless Networks screen:
 - I. Tap "Network Adapters"
 - II. Tap the desired network and then the "Network Key tab"
 - III. Tap "WEP" in the "Data Encryption:" drop-down box
 - IV. Tap "This Key is provided for me automatically" (or enter the appropriate Network key)
 - V. Tap the "802.1x" tab
 - VI. Check the "Use IEEE 802.1x access control" box
 - VII. Tap the desired authentication protocol in the "EAP type:" drop-down box

h5500 series

Perform the following steps to set up an HP-supported authentication protocol on an HP iPAQ Pocket PC h5500 series handheld device:

1. Turn on the WLAN.
 - A. Tap Start, "iPAQ wireless" and then the "WLAN" button (if the WLAN is on, then the WLAN icon will be green; if the WLAN is off, then the WLAN icon will be orange).
 - B. Tap "X" to return to the Start screen.
2. At the Start screen, tap Settings and then the Connections tab.
3. Tap the Connections icon, the Advanced tab, and then "Network Card."
4. In the "Configure Wireless Networks" box, highlight the appropriate default setting or create a new setting, and then tap "Authentication."

NOTE: The HP iPAQ Pocket PC h5500 series handheld device has one of two ROM releases. The setup steps are identical for both ROM releases through step three. Beginning with step four, however, the Configure Wireless Networks screen may differ slightly, as demonstrated in four-A and four-B.

5. On the Configure Network Authentication screen:
6. Check "Data encryption (WEP enabled)"
7. **Un**-check "Network Authentication (Shared mode)"
8. Check "The key is provided for me automatically" or enter the appropriate Network key
9. Check "Enable network access using IEEE 802.1x"
10. Tap the desired protocol in the "EAP type:" drop-down box
 - A. On the Configure Wireless Networks screen:
 - B. Tap "Network Adapters"
 - C. Tap the desired network and then the "Network Key" tab
 - D. Tap "WEP in the Data Encryption:" drop-down box
 - E. Tap "This Key is provided for me automatically" (or enter the appropriate Network key)
 - F. Tap the "802.1" tab
 - G. Check the "Use IEEE 802.1x access control" box
 - H. Tap the desired authentication protocol in the "EAP type:" drop-down box

Typical WLAN setup and installation scenarios

Updating the Pocket PC while connected to a desktop computer

h4100, h4300, h5400, and h5500 series

IMPORTANT: To prevent file corruption, keep the Pocket PC connected to the power adapter during the installation process.

1. Ensure that the Pocket PC is docked and connected to a desktop computer running Microsoft® ActiveSync® v3.7 or later.
2. Apply A/C power to the iPAQ Pocket PC (plug in the Pocket PC to an electrical outlet).
3. Launch the SoftPaq update.

NOTE: SoftPaqs can be found on the HP Business Support Center website at HP.com.

4. Follow the onscreen instructions and dialog boxes.
5. Undock the Pocket PC and perform a soft reset to complete the update.

The HP lab setup

HP tested configurations

HP iPAQ Pocket PC h4100, h4300, h5400, and h5500 series

Following is a partial list of the configurations that HP has tested with the wireless iPAQ Pocket PCs. Tested products varied in their firmware types and versions.

EAP-TLS

HP WL510 Wireless Enterprise Access Point
Microsoft Windows 2003 Server Operating System

LEAP

Cisco 1200 Series IOS and Vx-Works
Cisco Access Control Server 3.0
Microsoft Windows 2000 Server Operating System

PEAP

Cisco 1200 Series Internet Operating System (IOS)
Windows 2003 Server operating system

Performance (Throughput)

Cisco Aironet1200 Series Access Point
NetIQ Chariot Software

WEP

Cisco Aironet1200 Series Access Point with IOS firmware and Cisco Aironet 1200 Series Access Point with Vx-Works firmware
HP WL410 Wireless SMB Access Point
HP WL510 Wireless Enterprise Access Point
RoamAbout Access Point (64-bit-WEP)
Linksys, NetGear, and D-Link Systems home routers
HP WL400

WPA

Cisco Aironet1200 Series Access Point with IOS firmware
Linksys WRT54G Wireless-G Broadband Router
HP WL420 ProCurve Wireless Access Point

Troubleshooting problems

If the WLAN connection still doesn't work

Following are some troubleshooting tips to try if the WLAN connection does not work:

- If the WLAN connection does not work with the chosen wireless network, try turning off the WLAN Power Save modes. (See "Turning the power save features on and off" earlier in this paper.)

- Check the access point settings—ensure that the security setting allows third-party or non-Cisco devices to associate and authenticate on the network. (See “Setting up my HP iPAQ Pocket PC WLAN connection with an authentication protocol.” At step 6, highlight the appropriate access point and tap Properties.)
- If a Cisco LEAP access point is being used and the WLAN connection does not work, check to make sure of the following:
 - The latest version of Vx-Works operating system or IOS is installed on the access points
 - The latest version of ACS is installed on the server

Additional help

For additional help setting up a WLAN connection, problem troubleshooting, and specific information about an HP iPAQ Pocket PC, visit the HP website at www.hp.com. (On the homepage, click “Support & Drivers,” “Handheld Devices,” “iPAQ Pocket PCs,” and select the appropriate series; select the appropriate Model, and then click *using the wireless LAN*).

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